



CALS TEST NETWORK

# AFCTN Test Report 93-032

AFCTB-ID  
92-050



## Raster Transfer Test

using:



## Raytheon Company's Data



## MIL-R-28002A (Raster)

## Quick Short Test Report

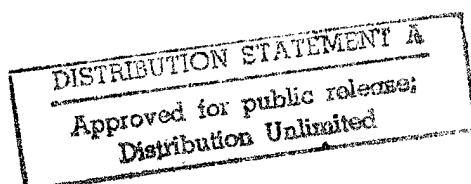
01 September 1992

19960822 031



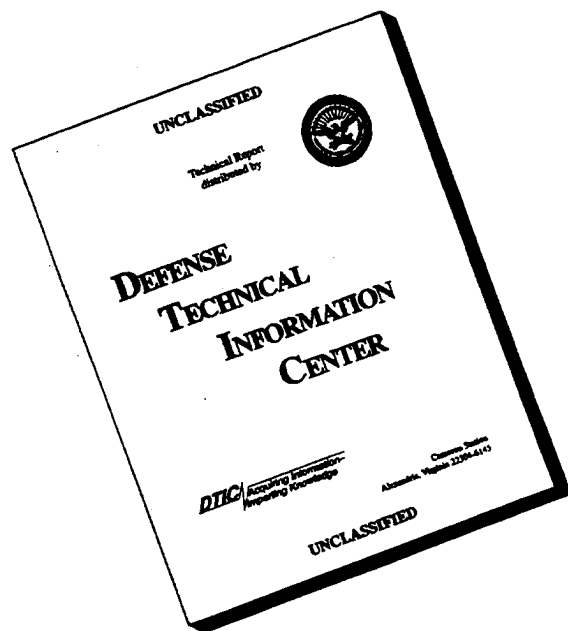
Prepared for

Electronic Systems Center



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**AFCTN Test Report**  
**93-032**

**AFCTB-ID**  
**92-050**

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**Raster Transfer Test**  
**Using:**  
**Raytheon Company's Data**

**MIL-R-28002A (Raster)**

**Quick Short Test Report**

**1 September 1992**

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**Prepared By**

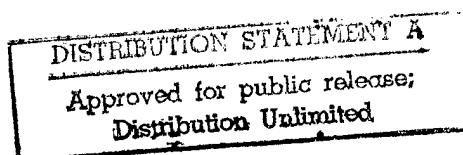
Air Force CALS Test Bed  
Wright-Patterson AFB, OH 45433

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## Contents

1.	Introduction.....	1
1.1.	Background.....	1
1.2.	Purpose.....	2
2.	Test Parameters.....	3
3.	1840A Analysis.....	5
3.1.	External Packaging.....	5
3.2.	Transmission Envelope.....	5
3.2.1.	Tape Formats.....	5
3.2.2.	Declaration and Header Fields.....	5
4.	IGES Analysis.....	6
5.	SGML Analysis.....	6
6.	Raster Analysis.....	6
7.	CGM Analysis.....	7
8.	Conclusions and Recommendations.....	7
9.	Appendix A - Tapetool Report Logs.....	8
9.1.	Tape Catalog.....	8
9.2.	Tape Evaluation Log.....	9
9.3.	Tape File Set Validation Log.....	13
9.4.	Other Tape Reading Logs.....	15
10.	Appendix B - Detailed Raster Analysis.....	16
10.1.	File D001R013.....	16
10.1.1.	Output IslandPaint.....	16

10.1.2. Output Preview.....	17
10.2. File D001R029.....	18
10.2.1. Output IslandPaint.....	18
10.2.2. Output Preview.....	19
10.3. File D001R046.....	20
10.3.1. Output IslandPaint.....	20
10.3.2. Output Preview.....	21
10.3.3. Output Ventura Publisher: R013/R046....	22
10.3.4. Output Ventura Publisher: R046/R046....	23

## **1. Introduction**

### **1.1 Background**

The Department of Defense (DoD) Air Force Continuous Acquisition and Life-Cycle Support (CALS) Test Network (AFCTN) is conducting tests of the military standard for the Automated Interchange of Technical Information, MIL-STD-1840A, and its companion suite of military specifications. The AFCTN is a DoD sponsored confederation of voluntary participants from industry and government managed by the Electronic Systems Center (ESC).

The primary objective of the AFCTN is to evaluate the effectiveness of the CALS standards for technical data interchange and to demonstrate the technical capabilities and operational suitability of those standards. Two general categories of tests are performed to evaluate the standards; formal and informal.

Formal tests are large and comprehensive, which follow a written test plan, require specific authorization from the DoD, and may take months to prepare, execute, and report.

Informal tests are quick and short, used by the AFCTN technical staff, to broaden the testing base. They include representative samples of the many systems and applications used by AFCTN participants. They also allow the AFCTN staff to gain feedback from many industry and government interpretations of the standards, to increase the base of participation in the CALS initiative, and respond to the many requests for help that come from participants. Participants take part voluntarily, benefit by receiving an evaluation of their latest implementation (interpretation) of the standards, interact with the AFCTN technical staff, gain experience using the standards, and develop increased confidence in them. The results of informal tests are reported in Quick Short Test Reports (QSTRs) that briefly summarize the standard(s) tested, the hardware and software used, the nature of the test, and the results.

## **1.2 Purpose**

The purpose of the informal test, reported in this QSTR, was to analyze Raytheon Company's interpretation and use of the CALS standards in transferring technical publication data. Raytheon used its CALS Technical Data Interchange System to produce data, in accordance with the standards, and delivered it to the AFCTN technical staff on a 9-track magnetic tape.



## 2. Test Parameters

Test Plan: AFCTB 92-050

Date of  
Evaluation: 1 September 1992

Evaluator: George Elwood  
Air Force CALS Test Bed  
HQ ESC/ENCP  
Suite 200  
4027 Colonel Glenn Hwy  
Dayton OH 45431-1672

Data  
Originator: Lynn B. Wiles  
Raytheon Company  
Missile System Division  
350 Lowell Street  
Andover MA 01810

Data  
Description: Technical Manual Test  
1 Document Declaration file  
52 Raster files

Data  
Source System:

Raster

HARDWARE

Unknown

SOFTWARE

Unknown

Evaluation Tools Used:

MIL-STD-1840A (TAPE)

SUN 3/280

AFCTN Tapetool v1.2.8 UNIX

AGFA Compugraphics CAPS/CALS v40.4

---

**MIL-R-28002 (Raster)**

SUN SparcStation 2

ArborText *g42tiff*

AFCTN *validg4*

AFCTN *calstb.475*

Island Graphics *IslandPaint v3.0*

Rosetta Technologies *Preview*

Cheetah

Inset Systems *HiJaak v2.02*

Software Publishing Corporation

(SPC) *Harvard Graphics v3.0*

Xerox Ventura Publisher

**Standards**

**Tested:**

MIL-STD-1840A

MIL-R-28002A

### **3. 1840A Analysis**

#### **3.1 External Packaging**

The tape arrived at the Air Force CALS Test Bed (AFCTB) enclosed in a box in accordance with the ASTM D 3951. The exterior of the box was marked with the magnetic tape warning label, as required by MIL-STD-1840A, para. 5.3.1.3.

The tape was enclosed in a barrier bag as required by MIL-STD-1840A, para. 5.3.1.2. Inspection of the tape reel showed the label indicating the recording density, as required by MIL-STD-1840A, para. 5.3.1. Enclosed in the box was a packing list showing all files recorded on the tape.

#### **3.2 Transmission Envelope**

The 9-track tape received by the AFCTB contained MIL-STD-1840A files. The files were named per the standard conventions.

##### **3.2.1 Tape Formats**

The 1840A tape was run through the AFCTN *Tapetool v1.2.8* utility. No errors were encountered while evaluating the contents of the tape labels.

The tape was also read using AGFA's *CAPS read1840A* tape utility without any reported problems.

##### **3.2.2 Declaration and Header Fields**

No errors were reported in the Document Declaration file or data header records.

#### 4. IGES Analysis

No Initial Graphics Exchange Specification (IGES) files were included on the tape.

#### 5. SGML Analysis

No Standard Generalized Markup Language (SGML) files were included on the tape.

#### 6. Raster Analysis

The tape contained 52 Raster images. All 52 images were checked using the AFCTN *validg4* utility. This utility reported all files were valid MIL-R-28002A files. Selected files were imported into the AFCTN *calstb.475* viewing utility without a reported problem. The images were clean with no orphan pixels noted. The images were scanned straight. File D001R046 displayed a slight notable angle.

A selection of files were converted using Rosetta Technologies' *Prepare* with no reported problems. The resulting files were viewed and printed. The hard copies of these files are included in the Appendix of this report.

The same files were converted using ArborText's *g42tiff* with no reported problems. The resulting files were viewed and printed using Island Graphics' *IslandPaint*.

The same files were converted to an IMG format on the PC using Inset Systems' *HiJaak* with no reported problems. They were also converted to a PCX format. The PCX format files were seen through a Viewer with no problems. The IMG files were imported into the Xerox *Ventura Publisher* and a hard copy is included in the Appendix of this report.

The Raster files meet the CALS MIL-R-28002A specification.

## **7. CGM Analysis**

No Computer Graphics Metafile (CGM) files were included on the tape.

## **8. Conclusions and Recommendations**

In summary, the MIL-STD-1840A tape from Raytheon Company was correct. The tape could be read properly using the AFCTN *Tapetool* and AGFA's *read1840A* without any reported errors.

The Raster images on the tape were all valid files. They were converted, viewed, and printed without a problem. The quality of the images was good.

The tape provided by the Raytheon Company meets the CALS MIL-STD-1840A requirements.

## 9. Appendix A - Tapetool Report Logs

### 9.1 Tape Catalog

Air Force CALS Test Network Catalog Evaluation - Version 1.2; Release Number 8

Standards referenced:

MIL-STD-1840A (1987) - Automated Interchange of Technical Information

ANSI X3.27 (1987) - File Structure and labeling of Magnetic Tapes  
for Information Interchange

ANSI X3.4 (1986) - Coded Character Sets - 7 Bit ASCII

Tue Sep 1 07:55:08 1992

MIL-STD-1840A File Catalog

File Set Directory: /cals/tapetool8/Set083

Page: 1

File Name	File Type	Record Format/ Length	Block Length/Total	Selected/ Extracted
D001	Document Declaration	D/00260	02048/000001	Extracted
D001R001	Raster	F/00128	02048/000022	Extracted
D001R002	Raster	F/00128	02048/000020	Extracted
D001R003	Raster	F/00128	02048/000027	Extracted
<<<<< PART OF LOG REMOVED HERE >>>>>				
D001R050	Raster	F/00128	02048/000028	Extracted
D001R051	Raster	F/00128	02048/000030	Extracted
D001R052	Raster	F/00128	02048/000028	Extracted

Catalog Process terminated normally.

---

## 9.2 Tape Evaluation Log

Air Force CALS Test Network Tape Evaluation - Version 1.2; Release Number 8  
Standards referenced:

ANSI X3.27 (1987) - File Structure and labeling of Magnetic Tapes  
for Information Interchange

ANSI X3.4 (1986) - Coded Character Sets - 7 Bit ASCII

Tue Sep 1 07:53:57 1992

ANSI Tape Import Log

Allocating tape drive /dev/rmt0...

/dev/rmt0 allocated.

VOL1CALS01

4

Label Identifier: VOL1  
Volume Identifier: CALS01  
Volume Accessibility:  
Owner Identifier:  
Label Standard Version: 4

HDR1D001                    CALS0100010001000000 92227 00000 000000

Label Identifier: HDR1  
File Identifier: D001  
File Set Identifier: CALS01  
File Section Number: 0001  
File Sequence Number: 0001  
Generation Number: 0000  
Generation Version Number: 00  
Creation Date: 92227  
Expiration Date: 00000  
File Accessibility:  
Block Count: 000000  
Implementation Identifier:

HDR2D0204800260

00

Label Identifier: HDR2  
Recording Format: D  
Block Length: 02048  
Record Length: 00260  
Offset Length: 00

\*\*\*\*\* Tape Mark \*\*\*\*\*

Actual Block Size Found = 2048 Bytes.

Number of data blocks read = 1.

\*\*\*\*\* Tape Mark \*\*\*\*\*

EOF1D001                    CALS0100010001000000 92227 00000 000001

Label Identifier: EOF1  
File Identifier: D001  
File Set Identifier: CALS01  
File Section Number: 0001  
File Sequence Number: 0001  
Generation Number: 0000  
Generation Version Number: 00  
Creation Date: 92227  
Expiration Date: 00000  
File Accessibility:  
Block Count: 000001  
Implementation Identifier:

EOF2D0204800260

00

Label Identifier: EOF2  
Recording Format: D  
Block Length: 02048  
Record Length: 00260  
Offset Length: 00

\*\*\*\*\* Tape Mark \*\*\*\*\*

HDR1D001R001                CALS0100010002000000 92227 00000 000000

Label Identifier: HDR1  
File Identifier: D001R001  
File Set Identifier: CALS01  
File Section Number: 0001  
File Sequence Number: 0002  
Generation Number: 0000  
Generation Version Number: 00  
Creation Date: 92227  
Expiration Date: 00000  
File Accessibility:  
Block Count: 000000



Implementation Identifier:

HDR2F0204800128

00

Label Identifier: HDR2  
Recording Format: F  
Block Length: 02048  
Record Length: 00128  
Offset Length: 00

\*\*\*\*\* Tape Mark \*\*\*\*\*

Actual Block Size Found = 2048 Bytes.

Number of data blocks read = 22.

\*\*\*\*\* Tape Mark \*\*\*\*\*

EOF1D001R001

CALS0100010002000000 92227 00000 000022

Label Identifier: EOF1  
File Identifier: D001R001  
File Set Identifier: CALS01  
File Section Number: 0001  
File Sequence Number: 0002  
Generation Number: 0000  
Generation Version Number: 00  
Creation Date: 92227  
Expiration Date: 00000  
File Accessibility:  
Block Count: 000022  
Implementation Identifier:

EOF2F0204800128

00

Label Identifier: EOF2  
Recording Format: F  
Block Length: 02048  
Record Length: 00128  
Offset Length: 00

\*\*\*\*\* Tape Mark \*\*\*\*\*

<<<<< PART OF LOG REMOVED HERE >>>>>

\*\*\*\*\* Tape Mark \*\*\*\*\*

---

EOF1D001R052            CALS0100010053000000 92227 00000 000028

Label Identifier: EOF1  
File Identifier: D001R052  
File Set Identifier: CALS01  
File Section Number: 0001  
File Sequence Number: 0053  
Generation Number: 0000  
Generation Version Number: 00  
Creation Date: 92227  
Expiration Date: 00000  
File Accessibility:  
Block Count: 000028  
Implementation Identifier:

EOF2F0204800128

00

Label Identifier: EOF2  
Recording Format: F  
Block Length: 02048  
Record Length: 00128  
Offset Length: 00

\*\*\*\*\* Tape Mark \*\*\*\*\*

\*\*\*\*\* Tape Mark \*\*\*\*\*

##### End of Volume CALS01 #####

##### End Of Tape File Set #####

Deallocating /dev/rmt0...

Tape Import Process terminated normally.

---

## 9.3 Tape File Set Validation Log

Air Force CALS Test Network File Set Evaluation - Version 1.2; Release Number 8  
Standards referenced:

MIL-STD-1840A (1987) - Automated Interchange of Technical Information  
MIL-R-28002 (1989) - Raster Graphics Representation In Binary  
Format, Requirements For

Tue Sep 1 07:55:09 1992

MIL-STD-1840A File Set Evaluation Log

File Set: Set083

Found file: D001

Extracting Document Declaration Header Records...

Evaluating Document Declaration Header Records...

srcsys: Raytheon MSD, 350 Lowell St. Andover, MA 01810 R. B. Goodwin, Andover Eng'g

ANF-B16 (508) 470-7425

srcdocid: PDPATRIOT 18876 AX UDCTN C

srcrelid: NONE

chglvl: ORIGINAL

dteisu: 19920814

dstsys: DSREDS

dstdocid: NONE

dstrelid: NONE

dtetrm: 19920814

dlvacc: NONE

filcnt: R52

ttlcls: UNCLASSIFIED

doccls: UNCLASSIFIED

doctyp: Product Data

docttl: Patriot Missile System

Found file: D001R001

Extracting Raster Header Records...

Evaluating Raster Header Records...

srcdocid: SDSD11444470 18876 F AX 00010001UDCTN0001 CC

dstdocid: SD11444470

txtfilid: NONE

figid: NONE

srcgph: NONE

doccls: UNCLASSIFIED

rtype: 1  
rorient: 000,270  
rpelcnt: 004549,003525  
rdensty: 0200  
notes: ANTENNA ELEMENT-IFF INTERCONNECTING DIAG.

Saving Raster Header File: D001R001\_HDR  
Saving Raster Data File: D001R001\_GR4

<<<< PART OF LOG REMOVED HERE >>>>

Found file: D001R052  
Extracting Raster Header Records...  
Evaluating Raster Header Records...

srcdocid: ED11449203            18876 C            AX   00010001UDCTN0001 CC  
dstdocid: 11449203  
txtfilid: NONE  
figid: NONE  
srcgph: NONE  
doccls: UNCLASSIFIED  
rtype: 1  
rorient: 000,270  
rpelcnt: 004545,003520  
rdensty: 0200  
notes: FLANGE, TUBE

Saving Raster Header File: D001R052\_HDR  
Saving Raster Data File: D001R052\_GR4

Evaluating numbering scheme...  
No errors were encountered during numbering scheme evaluation.  
Numbering scheme evaluation complete.

Checking file count...  
No errors were encountered during file count verification.  
File Count verification complete.

No errors were encountered in Document D001.

No errors were encountered in this File Set.

MIL-STD-1840A File Set Evaluation Complete.

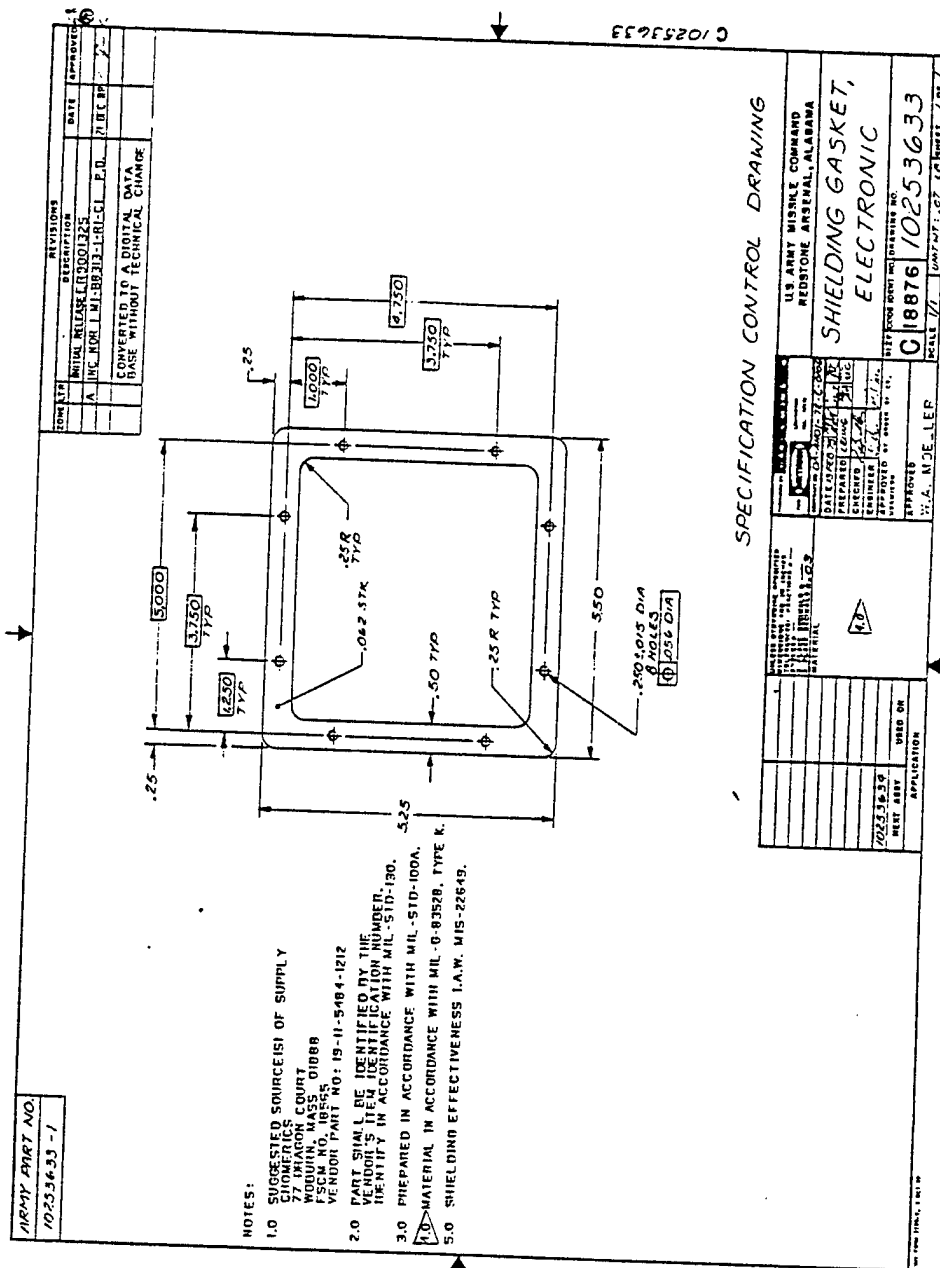
## **9.4 Other Tape Reading LOGs**

No reported errors.

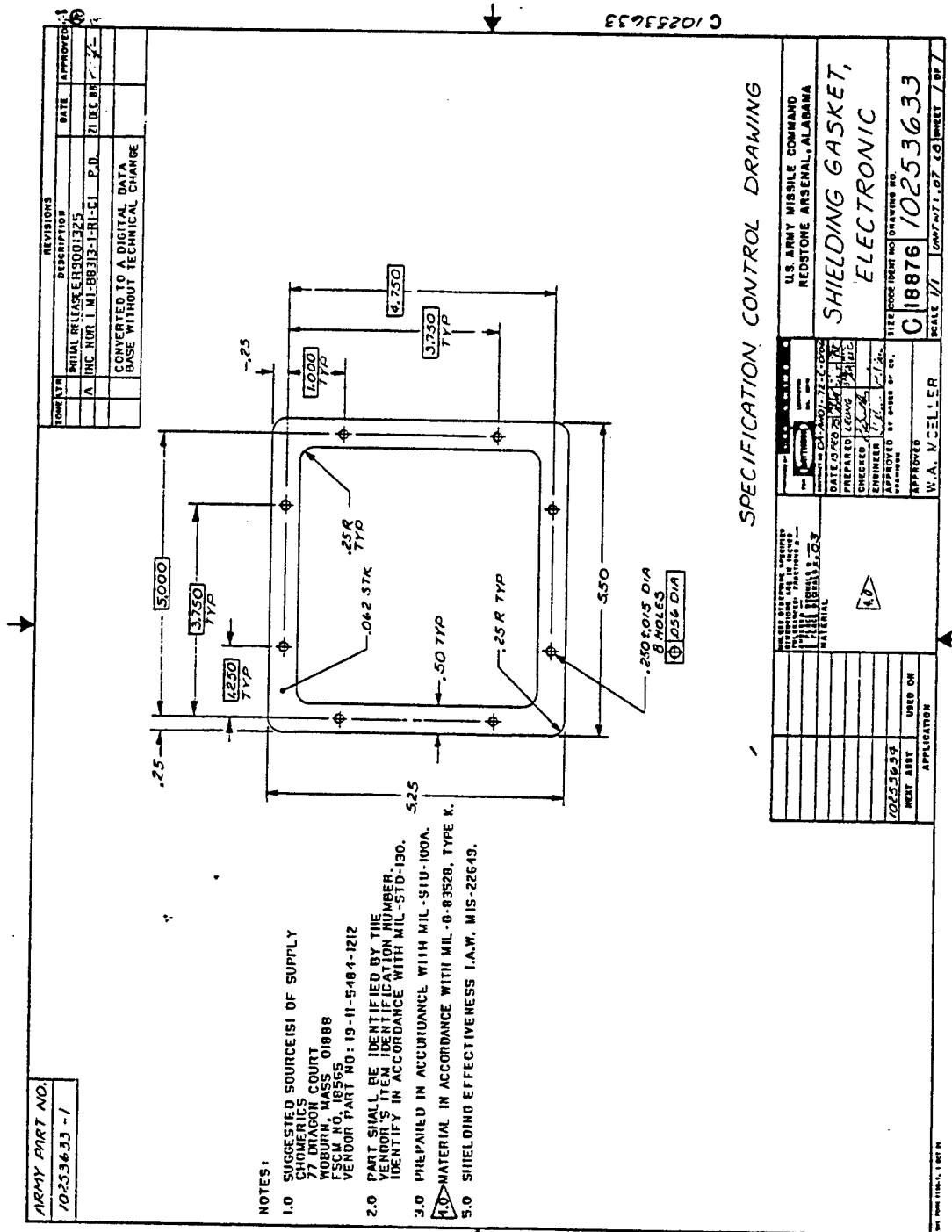
## 10. Appendix B - Detailed Raster Analysis

### 10.1 File D001R013

#### 10.1.1 Output IslandPaint



### 10.1.2 Output Preview



### 10.2.1 Output IslandPaint

C11449038



### 10.2.2 Output Preview

REF ID: A66666

THIS DRAWING IS THE PROPERTY OF THE U.S. ARMY. IT IS TO BE KEPT IN THE OFFICE OF THE ENGINEER, MILITARY DISTRICT OF CINCINNATI, OHIO. IT IS TO BE RETURNED TO THE OFFICE OF THE ENGINEER, MILITARY DISTRICT OF CINCINNATI, OHIO, WHEN REQUESTED. IT IS NOT TO BE REPRODUCED OR COPIED IN ANY MANNER WITHOUT THE WRITTEN PERMISSION OF THE OFFICE OF THE ENGINEER, MILITARY DISTRICT OF CINCINNATI, OHIO.

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QUAD 1-12-C-0106

NOTES:

1. MATERIAL: MAKE FROM PART NO. 1145R155
2. REMOVE BURRS AND BREAK SHARP EDGES
3. CHEMICAL FILM PER MIL-C-5541, CLASS 1A OR CLASS 3
4. IDENTIFY PER MIL-STD-130

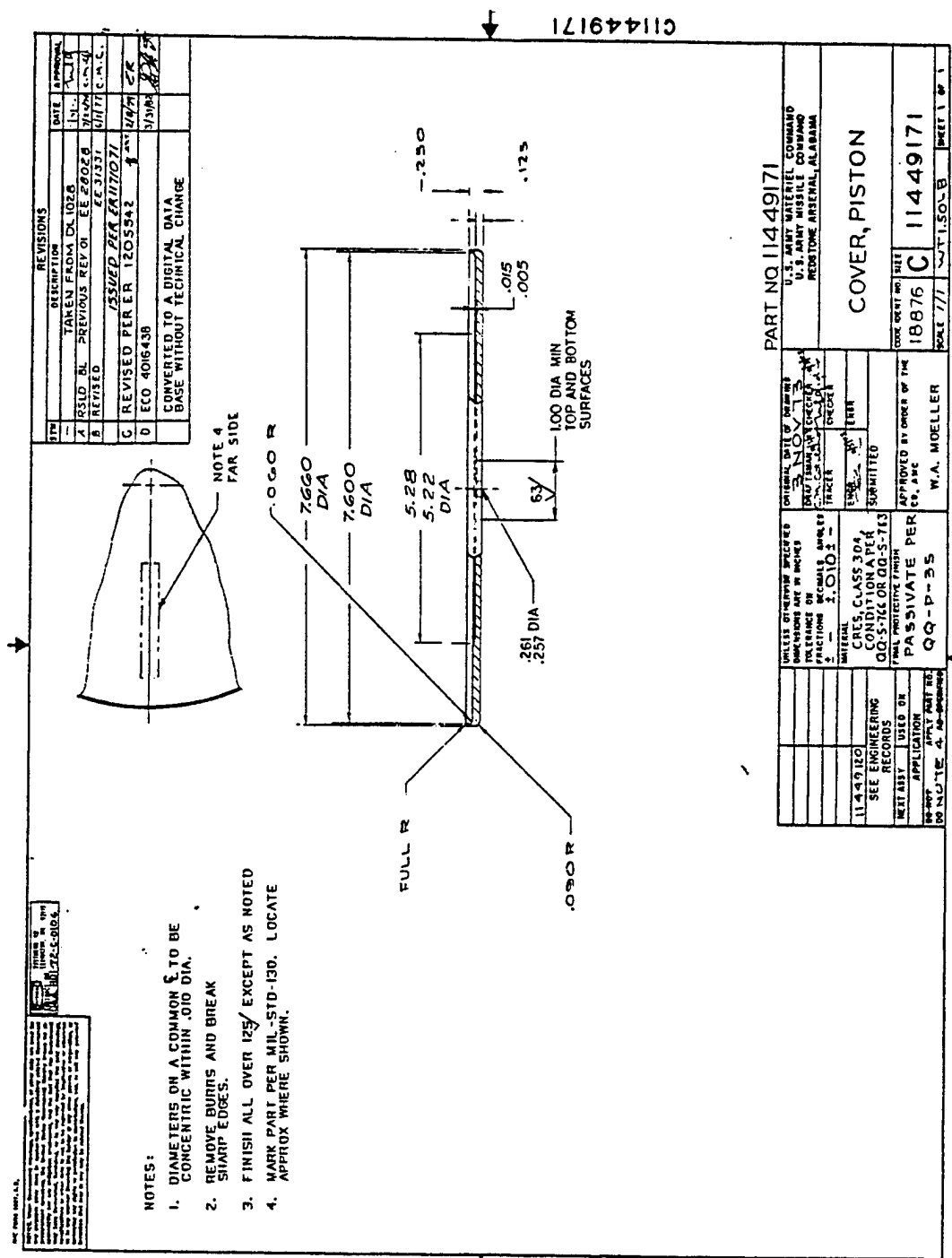
PART NO. 11449038

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES FRACTIONS DECIMALS ANGLES 3/16 3/32 1/8 1/4 3/8 1/2 3/4 1 1 1/2 2 3 4 5 6 8 10 12 16 20 24 32 40 48 60 72 96 120 144 180 216 240 288 360 432 480 576 720 864 960 1080 1296 1440 1728 2160 2592 3024 3628 4320 4896 5760 7200 8640 10080 12960 15552 18432 22368 27456 32768 39360 47376 57024 68400 81984 99072 119040 143040 172800 207360 248832 302400 362880 432000 518400 614400 737280 889920 1077120 1303680 1581312 1920000 2319360 2792640 3351040 4004480 4876800 5908800 7143040 8611200 10368000 12473600 15097600 18300800 22176000 26832000 32371200 39004800 46848000 56083200 66912000 79536000 94169600 111104000 130560000 152832000 178240000 207104000 239840000 286848000 338688000 406848000 483904000 572832000 675744000 795840000 936128000 1099840000 1289920000 1509760000 1753280000 2034400000 2356160000 2722400000 3127200000 3575440000 4071200000 4720320000 5538400000 6543360000 7754240000 9184000000 10856800000 12798400000 15048000000 17644800000 20627200000 24136000000 28201600000 32864000000 38176000000 44288000000 51264000000 59264000000 68352000000 79600000000 93168000000 109232000000 127984000000 149600000000 174368000000 202560000000 234400000000 270160000000 310160000000 354800000000 404480000000 459600000000 520640000000 588160000000 662720000000 744960000000 835360000000 934400000000 1042560000000 1160320000000 1288160000000 1426400000000 1575680000000 1736480000000 1909440000000 2095200000000 2294400000000 2507680000000 2735040000000 2977120000000 3234400000000 3507360000000 3797600000000 4105600000000 4431680000000 4776320000000 5140160000000 5523840000000 5928000000000 6353120000000 6799840000000 7268800000000 7760640000000 8276000000000 8815360000000 9389280000000 9998080000000 10643200000000 11325120000000 12045120000000 12793600000000 13571040000000 14378080000000 15215200000000 16083040000000 16981280000000 17910400000000 18871040000000 19863680000000 20888960000000 21947360000000 23039520000000 24166080000000 25327520000000 26524480000000 27757600000000 29027360000000 30334400000000 31679360000000 33062720000000 34485120000000 35947200000000 37449600000000 38993120000000 40578400000000 42206080000000 43876800000000 45581120000000 47320640000000 49095840000000 50907360000000 52755840000000 54641920000000 56566240000000 58529440000000 60532160000000 62575040000000 64658720000000 66783840000000 68950080000000 71158080000000 73408640000000 75702400000000 78040000000000 80421760000000 82848640000000 85321280000000 87840320000000 90396480000000 92999360000000 95649760000000 98348480000000 101096320000000 103893120000000 106738720000000 109633920000000 112579520000000 115576320000000 118624160000000 121723840000000 124876160000000 128081920000000 131341040000000 134654400000000 138022880000000 141447360000000 144928800000000 148467200000000 152063520000000 155718720000000 159433760000000 163209600000000 167047200000000 170947520000000 174910560000000 178937280000000 183028640000000 187184640000000 191406240000000 195694400000000 199949120000000 204271360000000 208662080000000 213121280000000 217648960000000 222245120000000 226910720000000 231645760000000 236451200000000 241328000000000 246276160000000 251296640000000 256389600000000 261555040000000 266793840000000 272106080000000 277492720000000 282953760000000 288489120000000 294099840000000 299785920000000 305548320000000 311387040000000 317303040000000 323297280000000 329370720000000 33552344000000	
---	--

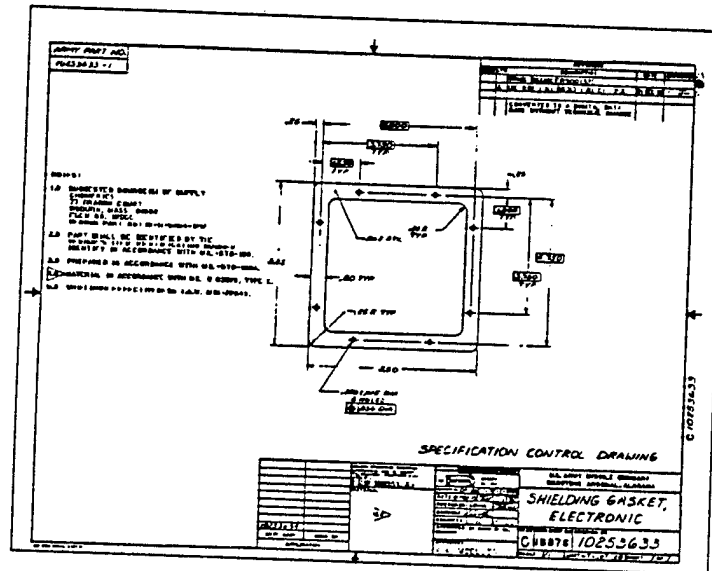
### 10.3.1 Output IslandPaint



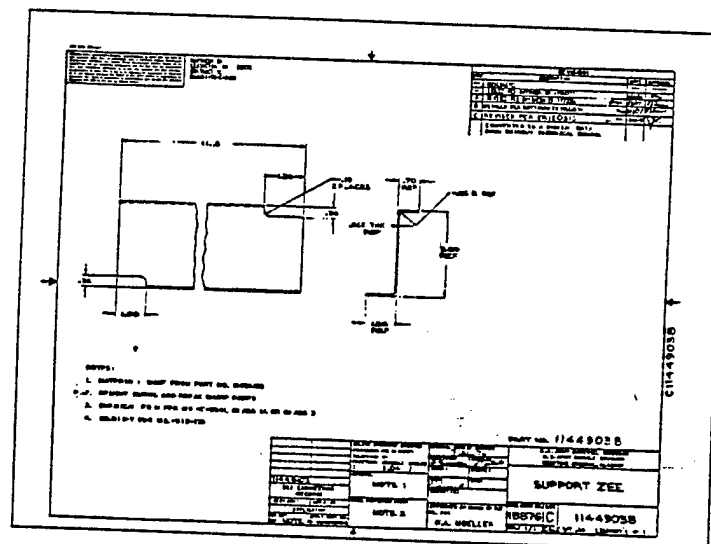
### 10.3.2 Output Preview



### 10.3.3 Output Ventura Publisher - D001R013 D001R046



D001R013



D001R029

